

U.S. Department of Energy
Office of River Protection
Mr. Michael K. Barrett
Contracting Officer
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

CCN: 030598

Dear Mr. Barrett:

**CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL FOR INFORMATION:
AUTHORIZATION BASIS CHANGE NOTICE 24590-WTP-ABCN-ESH-01-024,
REVISION 1, “RADIATION PROTECTION PROGRAM (RPP) DOCUMENT NUMBER
AND EDITORIAL CHANGES”**

- References:
- 1) CCN 029006, Letter, R. C. Barr, OSR, to R. F. Naventi, BNI, “Office of Safety Regulation (OSR) Response to Contractor Initiated Changes to the Radiation Protection Program (RPP), per Authorization Basis Changes Notice (ABCN) 24590-WTP-ESH-01-024, Revision 0,” 02-OSR-0055, dated February 19, 2002
 - 2) CCN 022069, Letter, A. R. Veirup, BNI to M. K. Barrett, ORP, “Completion of Bechtel National, Inc.’s Radiation Protection Program Implementation Period”, dated August 16, 2001

The U.S. Department of Energy, Office of Safety Regulation (OSR) commented on the Bechtel National, Inc. (BNI) Radiation Protection Program for Design and Construction (RPP) as submitted in December 2001 (Reference 1). The OSR pointed out apparent inconsistencies in various authorization basis documents and requested additional information and clarification. This letter and the attached Authorization Basis Change Notice (ABCN), 24590-WTP-ABCN-ESH-01-024, Revision 1 provide the requested information.

In Reference 1, OSR identified two items or areas of concern. Item 1 of the letter stated that the original changes implemented to the RPP, as a result of the approval of ABCN 24590-WTP-ABCN-ESH-01-024, Revision 0, were not editorial and therefore required more review and explanation in the ABCN as to why the changes were made. To address this concern, BNI has added explanatory language in Sections G, I, and J of Revision 1 to the ABCN. In short, RPP Appendices B and C were removed because they became irrelevant upon the implementation of the RPP as documented in Reference 2. Also, BNI made modifications to the RPP Requirements 14, 15, 17, 18, and 19 that were simply to replace RPP management and change control wording that referred to the “WTP document control system” with wording such as “the RPP will be managed and controlled in accordance with the QAM”. The Quality Assurance Manual (QAM)

governs the same “document control system” as previously invoked in the RPP. There is no reduction in commitment or reduction in effectiveness resulting from these wording changes and no impact on current project processes or procedures.

Item 2 in the OSR letter stated that there are still inconsistencies in terminology associated with the Quality Assurance Program (QAP) written into the Safety Requirements Document (SRD) and the Integrated Safety Management Plan (ISMP). SRD Safety Criteria (SC) 7.3-1, 7.3-2, and 7.3-12 and ISMP, Section 1.3.9, all refer to a “Quality Assurance Program” or “QAP”. The OSR letter suggests these citations should be changed to “Quality Assurance Manual or QAM”. BNI believes that terminology must be taken in context because the BNI Quality Assurance Program is described in the BNI QAM. We have intentionally retained “Quality Assurance Program (QAP)”, where appropriate, to show consistency with the terminology in 10 Code of Federal Regulations 830 Subpart A, which continues to refer to a “Quality Assurance Program (QAP)”. The QA Manual serves as the "umbrella" for defining the QA Program to meet DOE-O 414.1A, 10 CFR 830, Subpart A, NQA-1-1989, and DOE/RW-0333P, Revision 10. The QA Manual is structured to capture and integrate into a single cohesive document the requirements that apply to the project as stated in the Contract (DE-AC27-01RV14136) and reflects the 18 criteria structure of NQA-1-1989 and DOE/RW-0333P, Revision 10.

Authorization Basis Change Notice 24590-WTP-ABCN-ESH-01-022, which has been submitted for OSR approval, changes the language in SRD Safety Criteria 7.3-12 to clarify that the Quality Assurance Manual defines the Quality Assurance Program. Authorization Basis Change Notice 24590-WTP-ABCN-ESH-01-007 will address similar clarifications for Safety Criteria 7.3-2. Changes will not be made to SC 7.3.1 because the reference to a "Quality Assurance Program" means the Policy Q-02.1 in the QAM by the same title. Changes to the ISMP, Section 1.3.9 will be addressed in Authorization Basis Change Notice ABCN-24590-01-00008, Revision 2.

Also in Item 2, OSR points out that ISMP, Rev. 0d, Table 8-1 incorrectly lists the previous BNFL “Quality Assurance Program and Implementation Plan”. This is true and the erroneous citation was changed by ABCN-24590-01-008 Revision 0, the ISMP Standards Approval Package, submitted in September 2001. That specific change has not yet been approved by OSR.

Finally, Item 2 points out that the SRD and ISMP still refer to 10 CFR 830.120 instead of 10 CFR 830 Subpart A as the regulatory basis for quality assurance requirements. BNI recognizes this and has made the necessary reference/editorial changes in various ABCN’s awaiting DOE approval or in pre-submittal development.

This correspondence has been discussed with Ms. Jeanie Polehn of the OSR.

An electronic copy of ABCN 24590-WTP-ABCN-ESH-01-024, Revision 1, and attachment are provided for the OSR’s information and use.

If there are questions or comments concerning this transmittal, please contact Mr. Mark Platt at (509) 371-4891.

Very truly yours,

A. R. Veirup
Prime Contract Manager

MAP/slr

Attachment: Authorization Basis Change Notice, 24590-WTP-ABCN-ESH-01-024,
Revision 1, and attachment

cc: <u>Name (ALPHABETIZE)</u>	<u>Organization</u>	<u>MSIN</u>
Barr, R. C. w/a (1 hard copy and 1 electronic copy)	OSR	H6-60
Beranek, F. w/o	WTP	MS6-P1
Betts, J. P. w/o	WTP	MS4-A1
DOE Correspondence Control w/a	ORP	H6-60
Erickson, L. w/a	ORP	H6-60
Klein, D. A. w/o	WTP	MS6-P1
Naventi, R. F. w/o	WTP	MS4-A1
PDC w/a	WTP	MS5-K.1
Perks, M. F. w/o	WTP	MS6-P1
Ryan, T. B. w/a	WTP	MS6-R1
Schwier, J. F. w/o	ORP	H6-60
Spezialetti, W. R. w/o	WTP	MS6-P1
Struthers, D. J. w/o	ORP	H6-60
Swailles, J. H. w/a	ORP	H6-60
Taylor, W. J. w/a	ORP	H6-60
Veirup, A. R. w/o	WTP	MS4-A1



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ABCN Title Radiation Protection Program (RPP) Document Number and Editorial Changes

C. ABCN Approval

WTP Project Manager Ron Naventi
Print/Type Name Signature Date

II. Description of the Proposed Change to the Authorization Basis

D. Affected AB Documents:

Title	Document Number	Revision
Radiation Protection Program for Design and Construction	BNFL-TWP-SER-003	8

Decision to Deviate ☐ Yes ☒ No

If yes, DTD Number Deficiency Report Number
Initiating Document Number 02-OSR-0055 Revision

E. Describe the proposed changes to the Authorization Basis Documents:

1. Renummer the RPP from BNFL-TWP-SER-003 to 24590-WTP-RPP-ESH-01-001.
2. Revise text in the RPP to reflect new document numbers for the Quality Assurance Manual (Page A-3; New Page A.B-1), Waste Treatment Plant Radiological Control Manual (Page 1; New Page 2-1), and the RPP-WTP Occupational ALARA Program (Pages A-4; New Page A.B-1 and A-60; New Page A.K-1).
3. Delete Appendices B and C.
 - a. Page 1, Section 2 (New Page 2-1). Delete paragraphs 3 and 4 that reference Appendices B and C.
 - b. Page 1, Section 2, 2nd Paragraph (New Page 2-1). Insert the following sentence, "Bechtel National, Incorporated (BNI), is in full compliance with all applicable 10 CFR 835 requirements listed in Appendix A," after the 1st sentence of the paragraph.
 - c. Page A-5 (New Page A.B-2). Delete 2nd sentence in "Other Implementing Provisions" column for Requirement 16.
4. Correct typographical errors and make minor editorial changes as follows:
 - a. ~~Page 1, Section 2, 2nd Paragraph (New Page 2-1). Insert the following sentence, "Bechtel National, Incorporated (BNI), is in full compliance with all applicable 10 CFR 835 requirements listed in Appendix A," after the 1st sentence of the paragraph.~~
 - b. ~~Page 1, Section 2 (New Page 2-1). Delete paragraphs 3 and 4 that reference Appendices B and C.~~
 - c. ~~a.~~ Page 3, Section 5.2 (New Page 5-1). Revise text to reference revised table numbers 5-1 and 5-2.
 - d. ~~b.~~ Page 6, Section 7 (New Page 7-1). Capitalize the word "control" in the title of DOE G 441.6.
 - e. ~~c.~~ Pages A-3 through A-7 and A-38 (New Pages A.B-1 through A.B-4 and A.H-1). Replace reference to Quality Assurance Program or QAP with Quality Assurance Manual or QAM, as appropriate.
 - f. ~~Page A-5 (New Page A.B-2). Delete 2nd sentence in "Other Implementing Provisions" column for Requirement 16.~~
 - d. ~~a.~~ Page A-33 (New Page A.G-5). Change reference to Article 223.2 to read Article 223.3 for Requirement 69.
 - e. ~~b.~~ Page A-36 (New Page A.G-7). Combine text redundantly referencing Article 231.14 under "Policy and Commitment Basis" for Requirement 70.
 - f. ~~c.~~ Page A-59 (New Page A.J-2). Change reference to Article 712.4 to read Article 781 under "Policy and Commitment Basis" for Requirement 103.
 - g. ~~d.~~ Page A-70 (New Page A.N-2). Change reference to Article 345.4 to read Article 213.4d and reference



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ABCN Title Radiation Protection Program (RPP) Document Number and Editorial Changes

E. Describe the proposed changes to the Authorization Basis Documents:
to Article 213.4 to read Article 213.3 under "Policy and Commitment Basis" for Requirement 131.
5. Pages A-4 through A-6 (new pages A.B-2 through A.B-4). Replace reference to the Document Control System with QAM.

F. List associated ABCNs and AB documents, if any:

None

G. Explain why the change is needed:

The WTP project has adopted a policy that documents issued by the project will have unique numbers associated with the current project. The RPP and the documents it references are being revised in accordance with this policy.

Appendices B and C address issues associated with the implementation of the RPP for Design and Construction. Since BNI has achieved full compliance with all applicable requirements of 10 CFR 835, as documented in CCN 022069, these appendices are no longer applicable and are being deleted.

Since BNI has modified the BNFL Quality Program and changed the name to Quality Control Manual, all references to the Quality Program and administrative procedures have been updated to Quality Control Manual or QAM as appropriate.

H. List the implementation activities and the projected completion dates:

Activity

Formally transmit electronic copies of revised RPP to DOE.

Formally transmit controlled hard copies to DOE

Date

14 days or less after approval of ABCN

30 days after approval of ABCN

Revise the following implementing documents:

Documents

Describe extent of revisions

Date

1 See Below

Describe other activities:

Date

1 Numerous other project documents may reference the RPP using the current (BNFL) document number. Those references will be changed when the next revision of the affected document is issued. During the interim, the potential for using the incorrect document is addressed by the way that the BNFL document numbers are retired. A new revision of the current document will be issued with a revision history sheet noting that it is superseded by the new document which points the user to the new document number. Also, controlled copies of the RPP will be available for project use via the electronic index and Acrobat files.



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Revision 10

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III. Evaluation of the Proposed Change

I. Is DOE prior approval required?

- 1 Does the revision involve the deletion or modification of a standard previously identified or established in the SRD? Yes ☐ No ☒

Explain

~~The changes being made under this ABCN are editorial or administrative in nature.~~

There are no changes being made that impact the standards established or identified in the SRD. These changes only update the RPP document number, BNI compliance status, and properly refers to the Quality Assurance Manual.

- 2 Does the revision result in the reduction in commitment currently described in the AB? Yes ☐ No ☒

Explain

~~The changes being made under this ABCN are editorial or administrative in nature.~~

There are no changes being made that impact commitments made in the AB.

The commitments made in Appendices B and C of the RPP regarding its implementation have been met as documented in CCN 022069. Accordingly, deletion of these appendices does not constitute a reduction in commitment. Since BNI has achieved full compliance with all applicable 10 CFR 835 requirements, deletion of text discussing RPP implementation in Requirement 16 under "Other Implementing Provisions" does not reduce commitment.

- 3 Does the revision result in a reduction in the effectiveness of any procedure, program, plan, or management process described in the AB? Yes ☐ No ☒

Explain

~~The changes being made under this ABCN are editorial or administrative in nature.~~

There are no changes being made that impact procedures, programs, plans, or management processes described in the AB. These changes only update the RPP document number, BNI compliance status, and properly refer to the Quality Assurance Manual.

J. Complete the safety evaluation by describing how the revision to the AB:

- 1 will continue to comply with all applicable laws and regulations, conform to top-level safety standards, and provide adequate safety

~~The changes being made under this ABCN are editorial or administrative in nature.~~ There are no changes being made that impact:

- the standards established or identified in the SRD
- commitments made in the AB
- procedures, programs, plans, or management processes described in the AB.

Therefore, the changes will continue to comply with applicable laws and regulations, conform to top-level safety standards, and provide adequate safety.

The commitments made in Appendices B and C of the RPP regarding its implementation have been met as documented in CCN 022069. Accordingly, deletion of these appendices does not constitute a reduction in commitment. Since BNI has achieved full compliance with all applicable 10 CFR 835 requirements, deletion of text discussing RPP implementation in Requirement 16 under "Other Implementing Provisions" does not reduce commitment.



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- 2 will continue to conform to the original submittal requirements associated with the AB documents being revised

~~The changes being made under this ABCN are editorial or administrative in nature.~~ There are no changes being made that impact:

- the standards established or identified in the SRD
- commitments made in the AB
- procedures, programs, plans, or management processes described in the AB.

Therefore, the changes will continue to conform to the original submittal requirements associated with the RPP.

The commitments made in Appendices B and C of the RPP regarding its implementation have been met as documented in CCN 022069. Accordingly, deletion of these appendices does not constitute a reduction in commitment. Since BNI has achieved full compliance with all applicable 10 CFR 835 requirements, deletion of text discussing RPP implementation in Requirement 16 under “Other Implementing Provisions” does not reduce commitment.

- 3 will not result in inconsistencies with other commitments and descriptions contained in the AB or an authorization agreement

~~The changes being made under this ABCN are editorial or administrative in nature.~~ There are no changes being made that impact:

- the standards established or identified in the SRD
- commitments made in the AB
- procedures, programs, plans, or management processes described in the AB.

Therefore, the changes will not result in inconsistencies with other commitments and descriptions contained in the AB or authorization agreements.

K. Justification of the Proposed Change

Provide a justification that demonstrates that the proposed change is safe

~~The changes being made under this ABCN are editorial or administrative in nature.~~ There are no changes being made that impact:

- the standards established or identified in the SRD
- commitments made in the AB
- procedures, programs, plans, or management processes described in the AB.

E1 and E2. The WTP project has adopted a policy that documents issued by the project will have unique numbers associated with the current project. The RPP and the documents it references are being revised in accordance with this policy.

E3. The commitments made in Appendices B and C of the RPP regarding its implementation have been met as documented in CCN 022069. Accordingly, deletion of these appendices and associated text does not constitute a reduction in commitment. Since BNI has achieved full compliance with all applicable 10 CFR 835 requirements, deletion of text discussing RPP implementation in Requirement 16 under “Other Implementing Provisions” does not reduce commitment.

~~E4a. Statement reflects BNI RPP compliance status as documented in CCN 022069.~~

~~E4b. Paragraphs are being deleted per the justification provided in E3.~~

E4ae. Table numbers were changed to reflect proper format.

E4bd. Correction of typographical error.



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ABCN Title Radiation Protection Program (RPP) Document Number and Editorial Changes

Provide a justification that demonstrates that the proposed change is safe

E4^{ce}. Editorial changes necessary to properly refer to the Quality Assurance Manual.

~~E4^f. Sentence is being deleted per justification provided in E3.~~

E4^{dg}. Correction of typographical error.

E4^{eh}. Editorial change.

E4^{fi}. Correction of typographical error.

E4^{gi}. Correction of typographical errors.

E5. Correctly identifies the QAM as the governing program for administrative control of the RPP. Reference to the Document Control System has been removed since it is an implementing program of the QAM.

L. Certification of Continued SRD Adequacy

Based on evaluations from III.I.1 and III.J.1. If question III.I.1 is marked "yes, Project Manager certification is required. The Project Manager's signature certifies that the revised SRD continues to identify a set of standards that provide adequate safety, complies with WTP applicable laws and regulations, and conforms with top-level safety standards and principles. This certification is based on adherence to the DOE/RL-96-0004 standards identification process and successful completion of review and confirmation by the PSC.

WTP Project Manager:

Print/Type Name

Signature

Date

M. List of Attachments

1. Changes to *Radiation Protection Program for Design and Construction* to be issued as 24590-WTP-RPP-ESH-01-001 Rev 0.

2 RPP Document Organization

The RPP provides a description of the plans and measures for achieving compliance with the requirements of 10 CFR 835. Descriptions within this document may include references to DOE Implementation Guides or other industry standards. Where applicable, mandatory or optional use will be noted for each reference cited for guidance.¹

A matrix of each 10 CFR 835 requirement and the plans and measures for achieving compliance with that specific requirement is contained in Appendix A, WTP Compliance with 10 CFR 835 Requirements (Design and Construction Phase). [Bechtel National, Inc. \(BND\) is in full compliance with all applicable 10 CFR 835 requirements listed in Appendix A.](#) The matrix includes plans and measures described in ~~MN-24590-01-00001~~ [24590-WTP-MN-ESH-01-001](#), *Waste Treatment Plant Radiological Control Manual* (WTPRCM) and/or various RPP-WTP programs, as appropriate. The program documents, where applicable, are listed as “other implementing provisions” for the lead requirement in the set; however, they are not repeated for each subsequent sub-requirement within the set.

~~Appendix B presents a compliance status matrix and the committed time frame to achieve compliance, if required. A detailed schedule to achieve compliance will be developed within 30 days following RPP approval or DOE approval of the July 15 baseline schedule deliverable, whichever occurs later.~~

~~Appendix C provides the current working schedule for development and implementation of the RPP supporting programs and procedures. This material is provided for DOE information and, depending on the baseline schedule and construction start date, is subject to change.~~

¹ Compliance with US Department of Energy Implementation Guides is not mandatory. Acknowledging their use or other guidance documents, as noted in the Bibliography, in the preparation of this RPP does not make compliance with these guides, or other referenced documents, enforceable.

5 Graded Approach

5.1 Discussion

The 10 CFR 835 consists primarily of highly prescriptive worker safety requirements that establish the radiation protection standards, limits, and program requirements for protecting individuals from ionizing radiation resulting from the conduct of DOE activities. These very specific requirements are not subject to a graded approach. However, the rule also contains eight requirements that are “performance-based” (that is, specify an end result without prescribing what is necessary to achieve the desired results), and ten others that require a terminology clarification in order to clearly establish the intent and scope of the requirement.

For the purpose of this RPP, a graded approach is achieved either through the inclusion of clarifying terminology, or through the incorporation of narrative text which describes those BNI commitments considered appropriate to meet performance-based requirements. These additions are incorporated into Appendix A.

5.2 Summary of Requirements Subject to a Graded Approach

Requirements determined to be suitable for a graded approach through a performance-based approach, ~~are listed in~~ Table 5-1, or through the use of clarifying definitions, ~~are listed in~~ Table 5-2 ~~are listed in the following tables.~~

5.2.1 Graded Approach (8 Total)

The following table includes those non-prescriptive, performance-based requirements that are subject to a graded approach through the incorporation of additional provisions including narrative text, references to controlling technical bases and program documents, or other technical standards deemed sufficient to establish the commitment bases mandated by the requirements. Appendix A (WTP Project Compliance with 10 CFR 835 Requirements) contains a listing of these provisions. The graded approach is based on considerations of the magnitude of the hazard, the complexity of the situation, and the length of time the situation will exist.

5.2.2 Terminology Clarifications (10 Total)

Those requirements determined to be suitable for a graded approach through the incorporation of terminology clarifications include the following. Appendix A (WTP Project Compliance with 10 CFR 835 Requirements) contains these clarifications as an integral part of establishing BNI’s commitment basis.

Table 5-1 Requirements Subject to a Graded Approach

Requirement Number	10 CFR 835 Section	Discussion
21	103	BNI will apply the graded approach in the implementation of BNI Radiation Protection Program procedures for this functional area.
22	104	BNI will apply the graded approach in the implementation of BNI Radiation Protection Program procedures for this functional area.
43	401(a)	The requirements of Section 835.401 are subject to the graded approach through criteria established by BNI's monitoring program. The program establishes administrative records for tracking and trending radiological conditions based on routine tasks (radiation survey reports). Task descriptions and work documents specify the frequency of radiological surveys. Workplace air sampling program defines criteria for use of continuous air monitors.
101-103	901(c)	BNI will apply the graded approach in the implementation of BNI Radiation Protection Program procedures for this functional area. Note the application of section 901(c) graded approach is also referenced in requirements 101 through 103.
105	901(e)	BNI will apply the graded approach in the implementation of BNI Radiation Protection Program procedures for this functional area.
117	1102	² It should be recognized during evaluations of legacy contamination conditions that the 10 CFR 835 Appendix D values which trigger the posting and control requirements are applicable to surface contamination conditions only. They do not apply to situations where an item or area is contaminated only in volume or by matrix. Consequently, the discovery of items incorporating legacy contamination by volume, but not representing a surface contamination condition or hazard (such as contaminated flora, fauna, or some soils), would not typically represent a 10 CFR 835 noncompliance. Despite this 10 CFR 835 non-applicability, such environmental contamination conditions must be appropriately controlled ² . Should legacy contamination be discovered, it will be controlled in accordance with this RPP.

²Enforcement Guidance Supplement EGS 00-01: Enforcement Position Relative to the Discovery/Control of Legacy Contamination, dated May 4, 2000.

Table 5-2 Requirements Subject to Terminology Clarifications

Requirement Number	10 CFR 835 Section	Terminology Clarification
13	101(c)	“Commensurate with the nature of the activities performed” is the nature of those activities, described in Section 4.0, that are performed by BNI, its subcontractors, and suppliers at BNI-managed facilities and activities.
18	101(h)	“Changes that decrease the effectiveness of the RPP” are those changes which, if implemented, may result in unnecessary increases in occupational exposure or loss of control of radioactive materials without a corresponding increase in the scope or effectiveness of radiological work activities performed. BNI will apply the guidelines of DOE G 441.1-1, Section 4, paragraph 3, March 1999, when making this determination.
37	206(b)	BNI will apply the guidance of DOE G 441.1-6, “Evaluation and Control of Radiation Dose to the Embryo/Fetus Guide” of 29 April 1999, Section 4.2 guideline statement to maintain declared pregnant worker fetus dose below 50 mrem per month.
45	402(a)(1) to (4)	“Are likely to receive” recognizes that professional judgment and experience will be used in making decisions in specific circumstances. [DOE G 441.1-1, Section 4., paragraph 5, March 1999.]
47	402(c)(1) to (4)	Workers who “are likely to receive” recognizes that professional judgment and experience will be used in making decisions in specific circumstances. [DOE G 441.1-1, Section 4., paragraph 5, March 1999.]
49	403(a)(1)	“An individual is likely to receive” recognizes that professional judgment and experience will be used in making decisions in specific circumstances. [DOE G 441.1-1, Section 4, paragraph 5, March 1999.]
82	702(e)	“Reasonable efforts shall be made” means at least 3 attempts to obtain exposure information as recommended by Occupational Protection Record-Keeping and Reporting Guide, DOE G 441.1-11, Section 4.1.1.4 of May 1999.
91	704(b)	“Actions taken to maintain...” means the seven essential elements of an occupational ALARA program, as specified in the Implementation Guide, “Occupational ALARA Program Guide”, DOE G 441.1-2, Rev 1, March 17, 1999.
132	1302(a)	“Risk...shall be minimized” means, if alternative actions are available to meet emergency needs, then adopting the action with the lowest assessed risk of significant personnel injury shall take precedence over property loss considerations.
136	1304(a)	“Installations possessing sufficient quantities of fissile material to potentially constitute a critical mass” means as identified in the facility specific authorization document based on DOE 5480.23 dated 10 March 1994.

7 Bibliography

(Recognition of these resources in the development of the WTP RPP does not make them part of the RPP, or make them enforceable, unless already so.)

10 CFR 20, “Standards for Protection Against Radiation”, *Code of Federal Regulations*, as amended.

10 CFR 820, “Procedural Rules for DOE Nuclear Activities”, *Code of Federal Regulations*, as amended.

10 CFR 835, “Occupational Radiation Protection”, *Code of Federal Regulations*, as amended.

DOE, 1998, *TWRS Phase I Privatization Site Preconstruction Characterization Report*, HNF-2067, Revision 0, Richland, Washington.

DOE, 1999, *Evaluation and Control of Radiation Dose to the Embryo/Fetus Guide*, Implementation Guide G 441.1-6, US Department of Energy, Washington, DC.

DOE, 1999, *Internal Dosimetry Program Guide*, Implementation Guide G 441.1-3, US Department of Energy, Washington, D.C.

DOE, 1999, *Management and Administration of Radiation Protection Programs Guide*, Implementation Guide G 441.1-1, US Department of Energy, Washington, DC.

DOE, 1999, *Occupational ALARA Program Guide*, Implementation Guide G 441.1-2, US Department of Energy, Washington, DC.

DOE, 1999, *Occupational Radiation Protection Record-Keeping and Reporting Guide*, Implementation Guide G 441.1-11, US Department of Energy, Washington, DC.

DOE, 2000, *Enforcement Position Relative to the Discovery/Control of Legacy Contamination*, Enforcement Guidance Supplement EGS 00-01, US Department of Energy, Washington, DC.

ICRP, 1989, *Optimization and Decision-Making in Radiological Protection*, ICRP Publication 55, Ann. ICRP 20 No. 1.

ICRP, 1990, *Recommendations of the International Commission on Radiation Protection*, ICRP Publication 60 Ann. ICRP 21 Nos. 1-3.

Munson, L.H., 1988, *Health Physics Manual of Good Practices for Reducing Radiation Exposure to Levels that are As Low As Reasonably Achievable (ALARA)*, PNL-6577, Pacific Northwest Laboratory, Richland, Washington.

NRC, 1976, *Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations will be As Low As Is Reasonably Achievable*, Regulatory Guide 8.8, Rev 3, US Nuclear Regulatory Commission, Washington, DC.

24590-WTP-ABCN-ESH-01-024, Rev 1, Attachment 1
Radiation Protection Program for Design and Construction

Requirement # 10 CFR 835 Citation	Policy and Commitment Basis	
	Waste Treatment Plant Radiological Control Manual	Other Implementing Provisions
Subpart B Management and Administrative Requirements		
11 Sec. 835.101(a) Radiation protection programs A DOE activity shall be conducted in compliance with a documented RPP as approved by the DOE.		Upon DOE approval, this RPP establishes the documentation to implement § 835.101(a) as written. The RPP will be managed and controlled through the establishment of procedures developed according to the requirements of the QAP24590-WTP-QAM-QA-01-001, Quality Assurance Manual (QAM).
12 Sec. 835.101(b) The DOE may direct or make modifications to a RPP.		This is a provision and not a requirement. BNI accepts provision § 835.101(b) as written.
13 Sec. 835.101(c) The content of each RPP shall be commensurate with the nature of the activities performed and shall include formal plans and measures for applying the as low as reasonably achievable (ALARA) process to occupational exposure.		BNI's approved RPP establishes the documentation to implement § 835.101(c) as written. The RPP will be managed and controlled through the establishment of procedures developed according to the requirements of the QAP QAM . "Commensurate with the nature of the activities performed" is the nature of those activities performed by BNI, its subcontractors, and suppliers at BNI-managed facilities and activities. This requirement is implemented through PL-W375-NS00005 24590-WTP-PL-N S-01-002, RPP-WTP Occupational ALARA Program , which addresses the seven essential elements of ALARA programs.

24590-WTP-ABCN-ESH-01-024, Rev 1, Attachment 1
Radiation Protection Program for Design and Construction

Requirement # 10 CFR 835 Citation	Policy and Commitment Basis	
	Waste Treatment Plant Radiological Control Manual	Other Implementing Provisions
		Part of ALARA Implementation Guide, "Occupational ALARA Program Guide," DOE G 441.1-2 of 17 March 1999 includes seven essential elements of ALARA Program – Policy and Management Commitment; ALARA Training; Plans, and Procedures; Internal Assessments/Audits; ALARA Design Review; Radiological Work/Experiment Administration and Planning; and Records.
14 Sec. 835.101(d) The RPP shall specify the existing and/or anticipated operational tasks that are intended to be within the scope of the RPP. Except as provided in Sec. 835.101(h), any task outside the scope of a RPP shall not be initiated until an update of the RPP is approved by DOE.		See Applicability section of Radiation Protection Program, (Section 4). The RPP will be managed and controlled through the WTP document control system <u>in accordance with the QAM</u> . If any radiological activities are determined to be outside the RPP scope (as defined in Section 4), except as provided in § 835.101(h), BNI shall obtain DOE approval of a revised RPP. The RPP will be managed and controlled through the WTP document control system <u>in accordance with the QAM</u> .
15 Sec. 835.101(e) The content of the RPP shall address, but shall not necessarily be limited to, each requirement in this part.		Upon DOE approval, this RPP implements § 835.101(e) as written. The RPP will be managed and controlled through the WTP document control system <u>in accordance with the QAM</u> .
16 Sec. 835.101(f) The RPP shall include plans, schedules, and other measures for achieving compliance with regulations of this part. Unless otherwise specified in this part, compliance with amendments to this part shall	Article 141 (excerpt) “A Radiological Control Organization should be established to provide relevant support to line managers and workers. To effectively function, the Radiological Control Organization should	This matrix provides WTP plans and measures for achieving compliance with the requirements of 10 CFR 835. Following approval by DOE, this RPP will be implemented within 180 days

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be achieved no later than 180 days following approval of the revised RPP by DOE. Compliance with the requirements of § 835.402(d) for radiobioassay program accreditation shall be achieved no later than January 1, 2002.	be independent of the line organizational element responsible for production, operation or research activities and should have an equivalent reporting level.” Article 142.1 “The Radiological Control Manager should be an experienced professional in radiological control and be familiar with the design features and operations of the facility that affect the potential for exposures of persons to radiation.”	or prior to start of WTP construction activities, whichever occurs earlier.
17 Sec. 835.101(g) An update of the RPP shall be submitted to DOE: (1) Whenever a change or an addition to the RPP is made; (2) Prior to the initiation of a task not within the scope of the RPP; or (3) Within 180 days of the effective date of any modifications to this part.		BNI accepts requirement § 835.101(g)(1) as written. The RPP will be managed and controlled through the establishment of appropriate administrative measures through the WTP document control system <u>in accordance with the QAM.</u>
18 Sec. 835.101 (h) Changes, additions, or updates to the RPP may become effective without prior Department approval only if the changes do not decrease the effectiveness of the RPP and the RPP, as changed, continues to meet the requirements of this part. Proposed changes that decrease the effectiveness of the RPP shall not be implemented without submittal to and approval by the Department.		BNI accepts the requirement as written. “Changes that decrease the effectiveness of the RPP” are those changes which, if implemented, may result in unnecessary increases in occupational exposure or loss of control of radioactive materials without a corresponding increase in the scope or effectiveness of radiological work activities performed. BNI will apply the guidelines of DOE G 441.1-1, Section 4, paragraph 3, March 1999, when making this determination. The RPP will be managed and controlled through the establishment of appropriate administrative measures <u>in accordance with the QAM</u> through

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		the WTP document control system.
19 Sec. 835.101(i) An initial RPP or an update shall be considered approved 180 days after its submission unless rejected by DOE at an earlier date.		BNI accepts requirement § 835.101(i) as written. The RPP will be managed and controlled through the establishment of appropriate administrative measures <u>in accordance with the QAM</u> through the WTP document control system.
20 Sec. 835.102 Internal audits Internal audits of the radiation protection program, including examination of program content and implementation, shall be conducted through a process that ensures that all functional elements are reviewed no less frequently than every 36 months.	Article 134.1 (excerpt) “Internal audits of the Radiological Protection Program including examination of program content and implementation, shall [835.102] be conducted through a process that ensures that all functional elements are reviewed no less frequently than every 36 months.”	The audit program is based on the WTPRCM. All the articles are broken down into assessment cards, which list performance objectives and criteria and lines of inquiry. The cards are then organized into 36 groups and scheduled one group per month for the three-year period. Project Management is responsible for ensuring these audits are performed.
21 Sec. 835.103 Education, training, and skills Individuals responsible for developing and implementing measures necessary for ensuring compliance with the requirements of this part shall have the appropriate education, training, and skills to discharge these responsibilities.	Article 142.2 “The Radiological Control Manager shall [HNF] have the technical competence and experience to establish radiological control programs and the supervisory capability to direct the implementation and maintenance of radiological control programs.” Article 611 (excerpt & modified) “Individuals responsible for developing and implementing measures necessary for ensuring compliance with the requirements of [10 CFR 835] shall [835.103] have the appropriate education, training, and skills to discharge these responsibilities.”	The BNI Training Program implements the training requirements of the WTPRCM.
22 Sec. 835.104 Written procedures Written procedures shall be developed and implemented as necessary to ensure compliance with this part, commensurate with the radiological hazards created by the activity and consistent with the education, training, and skills of the individuals exposed to those hazards.	Article 125.11 (excerpt and modified) “Written procedures shall [835.104] be developed and implemented as necessary to ensure compliance with 10 CFR 835, commensurate with the radiological hazards created by the activity and consistent with the education, training, and skills of the individuals exposed to those hazards.”	BNI shall develop and implement procedures according to the requirements established in the Quality Assurance Program <u>Manual</u> .

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Subpart G	Posting and Labeling		
64	Sec. 835.601(a) General requirements Except as otherwise provided in this subpart, postings and labels required by this subpart shall include the standard radiation warning trefoil in black or magenta imposed upon a yellow background.	<p>Article 231.2 (excerpt)</p> <p>“Signs shall [835.601(a)] contain the standard radiation symbol colored magenta or black on a yellow background.”</p> <p>Article 231.13 (excerpt and modified)</p> <p>“The posting requirements in 10 CFR 835 may be modified to reflect the special considerations of DOE activities conducted at private residences or businesses. Such modifications shall [835.601(c)] provide the same level of protection to individuals as the existing provisions in 10 CFR 835.”</p> <p>Article 412.3 (excerpt and modified)</p> <p>“Labels shall [835.601(a)] include the standard radiation warning trefoil in black or magenta imposed upon a yellow background. Radioactive material labels applied to sealed radioactive sources may be excepted from these color specifications.”</p> <p>Article 412.6 (excerpt and modified)</p> <p>“The labeling requirements of 10 CFR 835 may be modified to reflect the special considerations of DOE activities conducted at private residences or businesses.”</p>	
65	Sec. 835.601(b) Signs required by this subpart shall be clearly and conspicuously posted and may include radiological protection instructions.	<p>Article 231.3 (excerpt)</p> <p>“Signs shall [835.601(b)] be conspicuously posted, clearly worded, and, where appropriate, may include radiological control instructions.”</p>	
66	Sec. 835.601(c) The posting and labeling requirements in this subpart may be modified to reflect the special considerations of DOE activities conducted at private residences or businesses. Such modifications shall provide the same level of protection to individuals as the existing provisions in this subpart.	<p>Article 231.13 (excerpt & modified)</p> <p>“The posting requirements in 10 CFR 835 may be modified to reflect the special considerations of DOE activities conducted at private residences or businesses.”</p> <p>Article 412.6 (excerpt and modified)</p> <p>The labeling requirements of 10 CFR 835 may be modified to reflect the special considerations of DOE activities conducted at private residences or businesses.</p>	BNI does not anticipate conducting radiological activities at private businesses or residences. Should circumstances occur where this would be required, the requirements of § 835.601(c) will be followed.

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	<p>Article 371.10 (excerpt and modified)</p> <p>“For the following specific subject areas, the radiological requirements of 10 CFR 835 may be modified by the limited application of the provisions of Article 113.3.10. Postings of privately owned and adjacent property.”</p> <p>Article 231.13 (excerpt and modified)</p> <p>“Such modifications shall [835.601(c)] provide the same level of protection to individuals as the existing provisions in 10 CFR 835.”</p> <p>Article 412.6 (excerpt and modified)</p> <p>“The labeling requirements of 10 CFR 835 may be modified to reflect the special considerations of DOE activities conducted at private residences or businesses.”</p>	
<p>67 Sec. 835.602(a)</p> <p>Controlled areas.</p> <p>Each access point to a controlled area (as defined in Sec. 835.2) shall be posted, whenever radiological areas or radioactive material areas exist in the area. Individuals who enter only controlled areas without entering radiological areas or radioactive material areas are not expected to receive a total effective dose equivalent of more than 0.1 rem (0.001 sievert) in a year.</p>	<p>Article 232.1 (excerpt)</p> <p>“Each access point to a controlled area shall [835.602(a)] be posted whenever radiological areas or radioactive material areas exist in the area.”</p> <p>Article 232.1 (excerpt)</p> <p>“Individuals who enter only controlled areas without entering radiological areas or radioactive material areas are not expected to receive a total effective dose equivalent of more than 0.1 rem in a year.”</p> <p>Article 551 (excerpt & modified)</p> <p>“Monitoring of individuals and areas shall [835.401(a)] be performed to:</p> <p>a. Demonstrate compliance with the requirements of 10 CFR 835.”</p>	
<p>68 Sec. 835.602(b)</p> <p>Signs used for this purpose may be selected by the contractor to avoid conflict with local security requirements.</p>	<p>Article 232.2 (excerpt)</p> <p>“The contractor may select the type of sign used to avoid conflict with local security requirements.”</p>	

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69	Sec. 835.603	<p>Article 234.1 (excerpt)</p> <p>“Areas shall [835.601 & 835.603] be posted to alert personnel to the presence of external radiation in accordance with Table 2-3.”</p> <p>Article 234.7 (excerpt)</p> <p>“Dose received in an hour may be used as the criterion for posting.”</p> <p>Table 2-3 (excerpt)</p> <p>Criteria for Posting Radiation Areas</p> <p>“Radiation Area: Dose Rate Criteria -</p> <p>> 0.005 rem/hr and ≤ 0.1 rem/hr at</p> <p>30 cm: Posting – “CAUTION, RADIATION AREA”.”</p> <p>WTPRCM Glossary (excerpt):</p> <p>Radiation area: “Means any area, accessible to individuals, in which radiation levels could result in an individual receiving a deep dose equivalent in excess of 0.005 rem (0.05 mSv) in one hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.”</p> <p>Article 234.1 (excerpt)</p> <p>“Areas shall [835.601 & 835.603] be posted to alert personnel to the presence of external radiation in accordance with Table 2-3.”</p> <p>Article 234.7 (excerpt & modified)</p> <p>“Dose received in an hour may be used as the criterion for posting; the unit “rad” is associated with dose rates that pose an immediate danger.”</p> <p>Table 2-3 (excerpt)</p> <p>Criteria for Posting Radiation Areas</p> <p>“High Radiation Area: Dose Rate Criteria -</p> <p>> 0.1 rem/hr at 30 cm and ≤ 500 rad/hr at 100 cm: Posting – “DANGER, HIGH RADIATION AREA”.”</p>	

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	<p>WTPRCM Glossary (excerpt):</p> <p>High radiation area: “Means any area, accessible to individuals, in which radiation levels could result in an individual receiving a deep dose equivalent in excess of 0.1 rem (0.001 Sv) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates.”</p> <p>Article 234.1 (excerpt)</p> <p>“Areas shall [835.601 & 835.603] be posted to alert personnel to the presence of external radiation in accordance with Table 2-3.”</p> <p>Article 234.7 (excerpt)</p> <p>“Dose received in an hour may be used as the criterion for posting; the unit “rad” is associated with dose rates that pose an immediate danger.”</p> <p>Table 2-3 (excerpt)</p> <p>Criteria for Posting Radiation Areas</p> <p>“Very High Radiation Areas: Dose Rate Criteria – > 500 rad/hr at 100 cm: Posting – “GRAVE DANGER, VERY HIGH RADIATION AREA”.”</p> <p>WTPRCM Glossary (excerpt):</p> <p>Very high radiation area: “Means any area, accessible to individuals, in which radiation levels could result in an individual receiving an absorbed dose in excess of 500 rads (5 grays) in one hour at 1 meter from a radiation source or from any surface that the radiation penetrates.”</p> <p>Article 235.1 (excerpt)</p> <p>“Areas shall [835.603(d-f)] be posted to alert personnel to contamination in accordance with Table 2-4.”</p>	

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	<p>Article 223.32 (excerpt)</p> <p>“Any area, accessible to individuals, where: 1) the concentration of airborne radioactivity, above natural background, exceeds or is likely to exceed the derived air concentration (DAC) values listed in appendix A or appendix C of 10 CFR 835; or 2) an individual present in the area without respiratory protection could receive an intake exceeding 12 DAC-hours in a week shall [835.2] be posted as an Airborne Radioactivity Area.”</p> <p>Table 2-4 (excerpt)</p> <p>Criteria for Posting Contamination, High Contamination and Airborne Radioactivity Areas</p> <p>“Airborne Radioactivity: Criteria – Concentrations 1 DAC or 12 DAC-hours/week: Posting – “CAUTION, AIRBORNE RADIOACTIVITY AREA”.”</p> <p>WTPRCM Glossary (excerpt and modified):</p> <p>Airborne radioactivity area: “Any area, accessible to individuals, where:</p> <p>1) The concentration of airborne radioactivity, above natural background, exceeds or is likely to exceed the derived air concentration (DAC) values listed in appendix A or appendix C of 10 CFR 835; or</p> <p>2) An individual present in the area without respiratory protection could receive an intake exceeding 12 DAC-hours in a week.”</p> <p>Article 222.1 (excerpt)</p> <p>“ Any area in which contamination levels exceed the values specified in Table 2-2 shall [835.1102(b)] be controlled in a manner commensurate with the physical and chemical characteristics of the contaminant, the radionuclides present, and the fixed and removable surface contamination levels.”</p> <p>Article 235.1 (excerpt)</p> <p>“Areas shall [835.603(d-f)] be posted to alert personnel to contamination in accordance with Table 2-4.”</p>	

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	<p>Table 2-4 (excerpt)</p> <p>“Criteria for Posting Contamination, High Contamination and Airborne Radioactivity Areas</p> <p>Contamination: Criteria – Contamination levels (dpm/100 cm²) > 1 time but ≤100 times Table 2-2 values:</p> <p>Posting – “CAUTION, CONTAMINATION AREA”.</p> <p>WTPRCM Glossary (excerpt):</p> <p>Contamination area: “Means any area, accessible to individuals, where removable surface contamination levels exceed or are likely to exceed the removable surface contamination values specified in Table 2-2 of the WTPRCM, but do not exceed 100 times those values.”</p> <p>Article 235.1 (excerpt)</p> <p>“Areas shall [835.603(d-f)] be posted to alert personnel to contamination in accordance with Table 2-4.”</p> <p>Table 2-4 (excerpt)</p> <p>Criteria for Posting Contamination, High Contamination and Airborne Radioactivity Areas</p> <p>“High Contamination: Criteria – Removable contamination levels (dpm/100 cm²) > 100 times Table 2-2 values:</p> <p>Posting – “DANGER, HIGH CONTAMINATION AREA”.</p> <p>WTPRCM Glossary (excerpt):</p> <p>High contamination area</p> <p>“Means any area accessible to individuals, where removable surface contamination levels exceed or are likely to exceed 100 times the removable surface contamination values specified in Chapter 2, Table 2-2</p> <p>Article 236.1 (excerpt)</p> <p>“The words “Caution, Radioactive Material(s)” shall [835.603(g)] be posted at each radioactive material area.”</p>	

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	<p>WTPRCM Glossary (excerpt):</p> <p>Radioactive Material Area: “Means any area within a controlled area, accessible to individuals, in which items or containers of radioactive material exist and the total activity of radioactive material exceeds the applicable values provided in Appendix 4A of the WTPRCM.”</p>	
<p>70 Sec. 835.604(a)</p> <p>Exceptions to posting requirements</p> <p>Areas may be excepted from the posting requirements of § 835.603 for periods of less than 8 continuous hours when placed under continuous observation and control of an individual knowledgeable of, and empowered to implement, required access and exposure control measures.</p>	<p>Article 231.14 (Modified)</p> <p>“Areas may be excepted from the posting requirements of 10 CFR 835 for periods of less than 8 continuous hours when placed under continuous observation and.””</p> <p>Article 231.14 (Modified)</p> <p>“Control of an individual knowledgeable of, and empowered to implement, required access and exposure control measures.”</p>	
<p>71 Sec. 835.604(b)</p> <p>Areas may be excepted from the radioactive material area posting requirements of § 835.603(g) when:</p> <ul style="list-style-type: none"> (1) Posted in accordance with § 835.603(a) through (f); or (2) Each item or container of radioactive material is labeled in accordance with this subpart such that individuals entering the area are made aware of the hazard; or (3) The radioactive material of concern consists solely of structures or installed components which have been activated (i.e., such as by being exposed to neutron radiation or particles produced in an accelerator). 	<p>Article 236.3 (excerpt)</p> <p>“Areas may be excepted from the radioactive material area posting when:</p> <ul style="list-style-type: none"> a. Posted as a radiological area; or” b. Each item or container of radioactive material is labeled in accordance with the WTPRCM such that individuals entering the area are made aware of the hazard; or” c. The radioactive material of concern consists solely of structures or installed components which have been activated (i.e., such as being exposed to neutron radiation or particles produced by an accelerator).” 	
<p>72 Sec. 835.604(c)</p> <p>Areas containing only packages received from radioactive material transportation labeled and in non-degraded condition need not be posted in accordance with § 835.603 until the packages are monitored in accordance with § 835.405.</p>	<p>Article 231.16 (excerpt)</p> <p>“Areas containing only packages received from radioactive material transportation labeled and in non-degraded condition need not be posted in accordance with Articles 234, 235, and 236 until the packages are monitored in accordance with Articles 423.”</p>	

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73 Sec. 835.605 Labeling items and containers Except as provided in § 835.606, each item or container of radioactive material shall bear a durable, clearly visible label bearing the standard radiation warning trefoil and the words “Caution, Radioactive Material” or “Danger, Radioactive Material”. The label shall also provide sufficient information to permit individuals handling, using, or working in the vicinity of the items or containers, to take precautions to avoid or control exposures.	Article 412.1 (excerpt) “Except as provided in Articles 411.2 and 412.2, each item or container of radioactive material shall [835.605] bear a durable, clearly visible label bearing the standard radiation warning trefoil and the words “Caution, Radioactive Material” or “Danger, Radioactive Material.” Article 412.1 (excerpt) “The label shall [835.605] also provide sufficient information to permit individuals handling, using, or working in the vicinity of the items or containers to take precautions to avoid or control exposures.”	This requirement is met through criteria established in the BNI posting and labeling program.
74 Sec.835.606(a) Exceptions to labeling requirements Items and containers may be excepted from the radioactive material labeling requirements of § 835.605 when: (1) Used, handled, or stored in areas posted and controlled in accordance with this subpart and sufficient information is provided to permit individuals to take precautions to avoid or control exposures; or (2) The quantity of radioactive material is less than one tenth of the values specified in appendix E of this part; or (3) Packaged, labeled, and marked in accordance with the regulations of the Department of Transportation or DOE Orders governing radioactive material transportation; or (4) Inaccessible, or accessible only to individuals authorized to handle or use them, or to work in the vicinity; or (5) Installed in manufacturing, process, or other equipment, such as reactor components, piping, and tanks; or (6) The radioactive material consists solely of nuclear weapons or their components.	Article 411.2 “Except for sealed and unsealed sources, radioactive material located within Contamination, High Contamination or Airborne Radioactivity Areas does not require specific labeling, provided sufficient information is provided to permit individuals to take precautions to avoid or control exposures.” Article 412.2 (Modified) “Items and containers may be excepted from the radioactive material labeling requirements of Article 412.1 when:” a. The quantity of radioactive material is less than one-tenth of the values specified in appendix 4A; or” b. Packaged, labeled, and marked in accordance with the regulations of the Department of Transportation or DOE Orders governing radioactive material transportation; or” c. Inaccessible, or accessible only to individuals authorized to handle or use them, or to work in the vicinity; or” d. Installed in manufacturing, process, or other equipment, such as reactor components, piping, and tanks, or” e. The radioactive material consists solely of nuclear weapons or their components.”	This requirement is met through criteria established in the BNI posting and labeling program. BNI does not anticipate possessing radioactive material consisting solely of nuclear weapons or their components. Should circumstances occur where this would be required, the requirements of § 835.606(a)(6) will be followed.

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75 Sec. 835.606(b) Radioactive material labels applied to sealed radioactive sources may be excepted from the color specifications of § 835.601(a).	Article 412.3 (excerpt) “Radioactive material labels applied to sealed radioactive sources may be excepted from these color specifications.”	

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Subpart H Records			
76	Sec. 835.701(a)	<p>Article 711 (excerpt)</p> <p>“Radiological control records shall [835.701(a)] be maintained as necessary to document compliance with the requirements of 10 CFR 835 and with radiation protection programs required by § 835.101.”</p> <p>Article 712.2</p> <p>“Where radiological services (for example, dosimetry and laboratory analyses) are purchased, there should be a clear agreement regarding records responsibility during performance of the service. Records of results should reside in the custody of the originating contract organization.”</p> <p>Article 722.1(excerpt)</p> <p>“Records shall [835.702(a)] be maintained to document doses received by all individuals for whom monitoring was required by Articles 511 and 521 and to document doses received during planned special exposures, unplanned doses exceeding the monitoring thresholds of Articles 511 and 521, and authorized emergency exposures.”</p> <p>Article 731.2 (excerpt)</p> <p>“Records of doses, including zero dose, received by all members of the public for whom monitoring was performed shall [835.702(a)] be maintained. These records shall [835.702(c)(1)] be sufficient to evaluate compliance with all applicable dose limits and monitoring and reporting requirements.”</p>	<p>Multiple required data may be contained in a single data record to allow for management of data, records, and reports.</p> <p>BNI will maintain records required by this part in accordance with the WTP Quality Assurance ProgramManual.</p>
77	Sec. 835.701(b)	<p>Article 774.1 (excerpt and modified)</p> <p>“Unless otherwise specified in 10 CFR 835, records shall [835.701(b)] be retained until final disposition is authorized by DOE. All individual monitoring records required by Articles 721, 722, and 731.2, shall [835.702(h)] be transferred to DOE upon cessation of activities that could cause exposure to individuals.”</p>	

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78 Sec. 835.702(a) Individual monitoring records. Records shall be maintained to document doses received by all individuals for whom monitoring was required pursuant to Sec. 835.402 and to document doses received during planned special exposures, unplanned doses exceeding the monitoring thresholds of Sec. 835 .402, and authorized emergency exposures.	<p>Article 722.1 (excerpt)</p> <p>“Records shall [835.702(a)] be maintained to document doses received by all individuals for whom monitoring was required by Articles 511 and 521 and to document doses received during planned special exposures, unplanned doses exceeding the monitoring thresholds of Articles 511 and 521, and authorized emergency exposures.”</p> <p>Article 722.3 (excerpt)</p> <p>“Routine and special records related to radiation doses shall [835.702(a-b)] be retained for each person monitored. Procedures, data, and supporting information necessary for future verification or reassessment of the recorded doses shall [835.702(g); 835.704(e)] be recorded.”</p> <p>Article 722.12 (excerpt)</p> <p>“Authorized emergency exposures and planned special exposures shall [835.1301(b)] be accounted for separately, but maintained with the individual’s occupational exposure records.”</p> <p>Article 723.1 (excerpt)</p> <p>“The complete records of radiological incidents and occurrences involving personnel dose shall [835.1301(b)] be retained.”</p> <p>Article 731.2 (excerpt)</p> <p>“Records of doses, including zero dose, received by all members of the public for whom monitoring was performed shall [835.702(a)] be maintained. These records shall [835.702(c)(1)] be sufficient to evaluate compliance with all applicable dose limits and monitoring and reporting requirements.”</p> <p>Appendix 2A (modified and excerpted)</p> <p>“Emergency doses are in addition to and accounted for separately from the doses received under the limits in Table 2-1.”</p>	

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79 Sec. 835.702(b) The results of individual external and internal dose monitoring that is performed, but not required by Sec. 835.402, shall be recorded. Recording of non-uniform shallow dose equivalent to the skin is not required if the dose is less than 2 percent of the limit specified for the skin at Sec. 835.202(a)(4).	Article 722.1 (excerpt) “Records shall [835.702(a)] be maintained to document doses received by all individuals for whom monitoring was required by Articles 511 and 521 and to document doses received during planned special exposures, unplanned doses exceeding the monitoring thresholds of Articles 511 and 521, and authorized emergency exposures. The results of individual external and internal dose monitoring that is performed, but not required by Articles 511 and 521, shall [835.702(b)] be recorded.” Article 722.3 (excerpt) “Routine and special records related to radiation doses shall [835.702(a-b)] be retained for each person monitored. Procedures, data, and supporting information necessary for future verification or reassessment of the recorded doses shall [835.702(g); 835.704(e)] be recorded.” Article 722.13 (excerpt) “Recording of the non-uniform shallow dose equivalent to the skin is not required if the dose is less than 2 percent of the limit specified for the skin at Table 2-1.” Article 731.2 (excerpt) “Records of doses, including zero dose, received by all members of the public for whom monitoring was performed shall [835.702(a)] be maintained.” Table 2-1 (excerpt) “Type of exposure – General Employee: skin and extremities : 50 rem”	
80 Sec. 835.702(c) The records required by this section shall: (1) Be sufficient to evaluate compliance with subpart C of this part; (2) Be sufficient to provide dose information necessary to complete reports required by subpart I of this part;	Article 711 (excerpt and modified) “Radiological control records shall [835.701(a)] be maintained as necessary to document compliance with the requirements of 10 CFR 835 subpart C.”	WTPRCM, Table 2-1 lists Types of Exposure and their associated exposure limits for BNI radiological activities. WTPRCM, Table 2-1 lists Types of exposure and associated exposure limits for BNI radiological activities.

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<p>(3) Include the following quantities for external dose received during the year:</p> <p>(i) The effective dose equivalent from external sources of radiation (deep dose equivalent may be used as effective dose equivalent for external exposure);</p> <p>(ii) The lens of the eye dose equivalent;</p> <p>(iii) The shallow dose equivalent to the skin; and</p> <p>(iv) The shallow dose equivalent to the extremities.</p> <p>(4) Include the following information for internal dose resulting from intakes received during the year:</p> <p>(i) Committed effective dose equivalent;</p> <p>(ii) Committed dose equivalent to any organ or tissue of concern; and</p> <p>(iii) Identity of radionuclides.</p> <p>(1) Include the following quantities for the summation of the external and internal dose:</p> <p>(i) Total effective dose equivalent in a year;</p> <p>(ii) For any organ or tissue assigned an internal dose during the year, the sum of the deep dose equivalent from external exposures and the committed dose equivalent to that organ or tissue; and</p> <p>(iii) Cumulative total effective dose equivalent</p> <p>(6) Include the dose equivalent to the embryo/fetus of a declared pregnant worker.</p>	<p>Article 722.2 (excerpt)</p> <p>“Individual monitoring records required by Article 722 shall [835.702(c)]: a. Be sufficient to evaluate compliance with Articles 213, 214, and 215.”</p> <p>Article 722.1 (excerpt)</p> <p>“Documentation of all occupational doses received during the current year, except for doses resulting from planned special exposures conducted in compliance with Article 213.3 and emergency exposures authorized in accordance with Article 213.4, shall [835.702(d)] be obtained to demonstrate compliance with dose limits in Table 2-1.”</p> <p>Article 722.2 (excerpt and modified)</p> <p>“Individual monitoring records required by Article 722 shall [835.702(c)]: b. Be sufficient to provide dose information necessary to complete reports required by Article 781.”</p> <p>Article 722.3 (excerpt)</p> <p>“Routine and special records related to radiation doses shall [835.702(a-b)] be retained for each person monitored. Procedures, data, and supporting information necessary for future verification or reassessment of the recorded doses shall [835.702(g); 835.704(e)] be recorded.”</p> <p>Article 722.6</p> <p>“Records of the summation of external dose and committed dose equivalent to any organ receiving a reportable dose shall [835.702(c)(5)] be maintained for the individual receiving such dose.”</p> <p>Article 722.7 (excerpt)</p> <p>“Include the following quantities for the summation of the external and internal dose:</p> <p>a. Total effective dose equivalent in a year;</p> <p>b. For any organ or tissue assigned an internal dose during the year, the sum of the deep dose equivalent from external exposures and the committed dose equivalent to that organ or tissue; and</p>	

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	<p>c. Cumulative total effective dose equivalent.”</p> <p>Article 722.8 (excerpt)</p> <p>“The dose equivalent to the embryo/fetus of a declared pregnant worker shall [835.702(c)(6)] be maintained with the occupational exposure records for that worker.”</p> <p>Article 722.9 (excerpt)</p> <p>“Records of lifetime occupational dose, including cumulative total effective dose equivalent since January 1, 1989, shall [835.702(c)(5)] be maintained with the individual’s occupational exposure records.”</p> <p>Article 722.12</p> <p>“Authorized emergency exposures and planned special exposures shall [835.1301(b)] be accounted for separately, but maintained with the individual’s occupational exposure records.”</p> <p>Article 723.1</p> <p>“The complete records of radiological incidents and occurrences involving personnel dose shall [835.1301(b)] be retained.”</p> <p>Article 731.2</p> <p>“Records of doses including zero dose received by all members of the public for whom monitoring was performed shall [835.702(a)] be maintained. These records shall [835.702(c)(1)] be sufficient to evaluate compliance with all applicable dose limits and monitoring and reporting requirements.”</p> <p>Article 722.4 (excerpt)</p> <p>“External dose records shall [835.702(b)] include the following:</p> <p>a. Applicable extremity, skin, eye and whole body dose results measured with personnel dosimeters, including all multiple dosimeter badging results and area monitoring records</p> <p>b. Evaluations resulting from anomalous dose results such as unexpected high or low doses.</p> <p>d. Evaluations of nonuniform radiation doses.</p>	

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	<p>e. Quantities for external dose received during the year:</p> <p style="padding-left: 40px;">The effective dose equivalent from external sources of radiation (deep dose equivalent may be used as effective dose equivalent for external exposure)”</p> <p>Article 512.4 (excerpt)</p> <p>“Personnel exposures to the lens of the eye shall [835.702(c)(3)] be reported separately when monitored.”</p> <p>Article 722.4.e (excerpt)</p> <p>“External dose records shall [835.702(b)] include the following: Quantities for external dose received during the year:</p> <p style="padding-left: 40px;">(5) The lens of the eye dose equivalent.”</p> <p>Article 512.4 (excerpt)</p> <p>“Personnel exposures to the skin shall [835.702(c)(3)] be reported separately when monitored.”</p> <p>Article 722.4.e (excerpt)</p> <p>“External dose records shall [835.702(b)] include the following: Quantities for external dose received during the year:</p> <p style="padding-left: 40px;">(6) The shallow dose equivalent to the skin”</p> <p>Article 512.4 (excerpt)</p> <p>“Personnel exposures to the extremities shall [835.702(c)(3)] be reported separately when monitored.”</p> <p>Article 722.4.e (excerpt)</p> <p>“External dose records shall [835.702(b)] include the following: Quantities for external dose received during the year:</p> <p style="padding-left: 40px;">(7) The shallow dose equivalent to the extremities.”</p>	

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	<p>Chapter 2, Part 1 (excerpt)</p> <p>“The committed effective dose equivalent is used to assign internal dose received by personnel at DOE facilities. The committed effective dose equivalent is the resulting dose committed to the whole body from internally deposited radionuclides over a 50-year period after intake.”</p> <p>Table 2-1 Note 1</p> <p>“Internal dose to the whole body shall [835.203(a)] be calculated as committed effective dose equivalent. The committed effective dose equivalent is the resulting dose committed to the whole body from internally deposited radionuclides over a 50-year period after intake. Determinations of the effective dose equivalent shall [835.203(b)] be made using the weighting factor values provided in Appendix 2B.”</p> <p>Appendix 2B</p> <p>Weighting Factors for Organs and Tissues</p> <p>Article 722.5 (excerpt)</p> <p>“Internal dose records shall [835.702(b)] include the following:</p> <ul style="list-style-type: none"> a. Results of monitoring used to determine individual occupational dose from internal sources shall [835.703(b)] be documented and maintained. b. Applicable whole body and lung counting results (including chest wall thickness measurements where applicable). c. Applicable urine, fecal and specimen analysis results, including estimated intake and identity of radionuclides. e. Information for internal dose resulting from intakes received during the year: <ul style="list-style-type: none"> (8) Committed effective dose equivalent.” 	

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	<p>Table 2-1 Note 2:</p> <p>“The annual limit of exposure to “any organ or tissue” is based on the committed dose to that organ or tissue resulting from internally deposited radionuclides over a 50-year period after intake plus any deep dose equivalent to that organ during the year.”</p> <p>Article 722.5 (excerpt)</p> <p>“Internal dose records shall [835.702(b)] include the following:</p> <ul style="list-style-type: none"> a. Results of monitoring used to determine individual occupational dose from internal sources shall [835.703(b)] be documented and maintained. b. Applicable whole body and lung counting results (including chest wall thickness measurements where applicable). c. Applicable urine, fecal and specimen analysis results, including estimated intake and identity of radionuclides. e. Information for internal dose resulting from intakes received during the year: <ul style="list-style-type: none"> * Committed dose equivalent to any organ or tissue of concern.” <p>Article 722.6 (excerpt)</p> <p>“Records of the summation of external dose and committed dose equivalent to any organ receiving a reportable dose shall [835.702(c)(5)] be maintained for the individual receiving such dose.”</p> <p>Article 523.1-6 (excerpt)</p> <p>“Interpretations of bioassay results and subsequent dose assessments should include the following:</p> <ul style="list-style-type: none"> 1. Characteristics of the radionuclide, such as chemical and physical form.” 	

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	<p>Article 722.5.c (excerpt)</p> <p>“Internal dose records shall [835.702(b)] include the following:</p> <p>c. Applicable urine, fecal and specimen analysis results, including estimated intake and identity of radionuclides.</p> <p>e. Information for internal dose resulting from intakes received during the year:</p> <p style="padding-left: 40px;">(9) Identity of radionuclides.”</p> <p>Article 722.7.a (excerpt)</p> <p>“Include the following quantities for the summation of the external and internal dose:</p> <p>a. Total effective dose equivalent in a year;”</p> <p>Table 2-1: Note 2</p> <p>“The annual limit of exposure to “any organ or tissue” is based on the committed dose to that organ or tissue resulting from internally deposited radionuclides over a 50-year period after intake plus any deep dose equivalent to that organ during the year.”</p> <p>Article 722.6 (excerpt)</p> <p>“Records of the summation of external dose and committed dose equivalent to any organ receiving a reportable dose shall [835.702(c)(5)] be maintained for the individual receiving such dose.”</p> <p>Article 722.7.b (excerpt)</p> <p>“Include the following quantities for the summation of the external and internal dose:</p> <p>b. For any organ or tissue assigned an internal dose during the year, the sum of the deep dose equivalent from external exposures and the committed dose equivalent to that organ or tissue.”</p>	

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	<p>Article 212.2</p> <p>“Cumulative total effective dose equivalent shall [835.702(c)(5)(iii)] be recorded for all exposures received since January 1, 1989.”</p> <p>Article 722.7.c (excerpt)</p> <p>“7. Include the following quantities for the summation of the external and internal dose:</p> <p>c. Cumulative total effective dose equivalent.”</p> <p>Article 722.9 (excerpt)</p> <p>“Records of lifetime occupational dose, including cumulative total effective dose equivalent since January 1, 1989, shall [835.702(c)(5)] be maintained with the individual’s occupational exposure records.”</p> <p>Table 2-1</p> <p>Summary of Dose Limits</p> <p>“Declared Pregnant Worker: Embryo/Fetus.”</p> <p>Article 722.8 (excerpt)</p> <p>“The dose equivalent to the embryo/fetus of a declared pregnant worker shall [835.702(c)(6)] be maintained with the occupational exposure records for that worker.”</p>	
<p>81 Sec. 835.702(d)</p> <p>Documentation of all occupational doses received during the current year, except for doses resulting from planned special exposures conducted in compliance with § 835.204 and emergency exposures authorized in accordance with § 835.1302(d), shall be obtained to demonstrate compliance with Sec. 835.202(a). If complete records documenting previous occupational dose during the year cannot be obtained, a written estimate signed by the individual may be accepted to demonstrate compliance.</p>	<p>Article 213.1 (excerpt)</p> <p>“All occupational doses received during the current year, except doses resulting from planned special exposures conducted in compliance with Article 213.3 and emergency exposures authorized in accordance with Article 213.4, shall [835.202(b)] be included when demonstrating compliance with Table 2-1, occupational dose limits for general employees and minors.”</p>	

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	<p>Article 722.1 (excerpt and modified)</p> <p>“Documentation of all occupational doses received during the current year, except for doses resulting from planned special exposures conducted in compliance with Article 213.3 and emergency exposures authorized in accordance with Article 213.4, shall [835.702(d)] be obtained to demonstrate compliance with dose limits in Table 2-1, for general employees. If complete records documenting previous occupational dose during the year cannot be obtained, a written estimate signed by the individual may be accepted to demonstrate compliance [835.702(d)].”</p> <p>Article 213.2.c (excerpt and modified)</p> <p>“Radiological workers from other facilities may receive occupational exposure as a radiological worker if they:</p> <p>c. Provide their radiation dose records for previous years and written estimates, signed by the individual, for the current year.”</p> <p>Article 722.1 (excerpt)</p> <p>“If complete records documenting previous occupational dose during the year cannot be obtained, a written estimate signed by the individual may be accepted to demonstrate compliance [835.702(d)].”</p>	
<p>82 Sec. 835.702(e)</p> <p>For radiological workers whose occupational dose is monitored in accordance with § 835.402, reasonable efforts shall be made to obtain complete records of prior years occupational internal and external doses.</p>	<p>Article 213.2.c</p> <p>“Radiological workers from other DOE or DOE contractor facilities may receive occupational exposure as a radiological worker if they:</p> <p>c. Provide their radiation dose records for previous years and written estimates, signed by the individual, for the current year.”</p> <p>Article 721.1 (excerpt)</p> <p>“For radiological workers whose occupational dose is monitored in accordance with Articles 511 and 521, reasonable efforts shall [835.702(e)] be made to obtain complete records of prior years occupational internal and external doses.”</p>	<p>“Reasonable efforts shall be made” means at least 3 attempts to obtain exposure information as recommended by Occupational Protection Record-Keeping and Reporting Guide, DOE G 441.1-11, Section 4.1.1.4 of May 1999.</p>

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83 Sec. 835.702(f) The records specified in this section that are identified with a specific individual shall be readily available to that individual.	Article 781.4 (excerpt) “The records specified in Articles 721 and 722 that are identified with a specific individual shall [835.702(f)] be readily available to that individual.” Article 722.2 (excerpt and modified) “Radiation dose records shall [835.702(c)] contain information sufficient to identify each person, including social security, employee number, or other unique identification number.”	
84 Sec. 835.702(g) Data necessary to allow future verification or reassessment of the recorded doses shall be recorded.	Article 722.3 “Routine and special records related to radiation doses shall [835.702(a-b)] be retained for each person monitored. Procedures, data, and supporting information necessary for future verification or reassessment of the recorded doses shall [835.702(g); 835.704(e)] be recorded.”	
85 Sec. 835.702(h) All records required by this section shall be transferred to the DOE upon cessation of activities at the site that could cause exposure to individuals.	Article 774.1 (excerpt) “All individual monitoring records required by Articles 721, 722, and 731.2, shall [835.702(h)] be transferred to DOE upon cessation of activities that could cause exposure to individuals.”	
86 Sec. 835.703(a) <i>The following information shall be documented and maintained:</i> Results of monitoring for radiation and radioactive material as required by subparts E and L of this part, except for monitoring required by Sec. 835.1102(d).	Article 751.1 (excerpt) Results of monitoring for radiation and radioactive material as required by Articles 421 and 423, and Chapter 5, Part 5, shall [835.703(a)] be documented and maintained. Article 752.1 (excerpt) “In addition to the elements provided in Article 751, records of radiation surveys shall [835.401(a); 835.703] include, at a minimum, the following information: a. Instrument model and serial number b. Results of the measurements of area dose rates” Article 753.1 (excerpt) “In addition to the elements provided in Article 751, records of airborne radioactivity shall [835.401(a); 835.703] include, at a minimum, the following information:	

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	<p>a. Model and serial numbers of the sampler and laboratory counting instrument when available or unique identifier of each sampler and instrument.</p> <p>b. Location of fixed air samplers</p> <p>c. Location of portable air samplers used for a survey</p> <p>d. Air concentrations in general airborne areas and breathing zones</p> <p>e. Supporting parameters, including collection efficiency, flow rate, duration of sampling, correction factors and filter medium.”</p> <p>Article 754.1 (excerpt)</p> <p>“In addition to the elements required by Article 751, records of contamination surveys shall [835.401(a); 835.703] include, at a minimum, the following information:</p> <p>a. Model and serial number of counting equipment.</p> <p>b. Contamination levels (using appropriate units) and appropriate supporting parameters including counting efficiency, counting time, correction factors, type of radiation and whether the contamination was fixed or removable.</p> <p>c. Location of areas found to contain hot particles or high concentrations of localized contamination</p> <p>d. Follow-up survey results for decontamination processes cross-referenced to the original survey.”</p>	

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87	Sec. 835.703(b)	Article 712.1	

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	Article 753.1.d & e (excerpt)	
88 Sec. 835.703(c) Results of monitoring for the release and control of material and equipment as required by Sec. 835.1101; and	Article 421.5 “The results of monitoring for the release and control of material and equipment shall [835.703(c)] be documented and maintained.”	
89 Sec. 835.703(d) Results of maintenance and calibration performed on instruments and equipment as required by Sec. 835.401(b).	Article 564.1.d (excerpt and modified) “Calibration facilities should take the following actions: d. Generate records of calibration, functional tests and maintenance.” Article 761.1, 2, 3, 4 (1 is modified, 2 is an excerpt) 1. “Results of calibrations performed on instruments and equipment used for monitoring individuals, materials, and areas as required by 10 CFR 835 shall [835.703(d)] be documented and maintained and should include frequencies, method, dates, personnel, training and traceability of calibration sources to National Institute of Science and Technology or other acceptable standards. 2. Calibration records should be maintained for the following equipment: a. Portable survey instruments b. Bioassay measurement equipment c. Laboratory, counting room and fixed radiation measuring equipment d. Process and effluent monitors and sampling equipment e. Radiation area monitors f. Portal monitors and other personnel contamination monitors	

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	<p>g. Pocket and electronic dosimeters</p> <p>h. Air sampling equipment</p> <p>i. Tool and waste monitoring equipment</p> <p>j. Protective clothing and equipment monitors</p> <p>k. Dosimetry Processing Instrumentation</p> <p>l. Other devices used in radiation detection or measurement, as applicable.</p> <p>3. Documentation of instrument operational checks shall [835.703(d)] be maintained for a period not less than the calibration period of the instrument or equipment</p> <p>4. Maintenance histories, including the nature of any defects and corrective actions taken, and calibration results for each instrument or equipment shall [835.703(d)] be created and retained.”</p> <p>Article 762 (excerpt)</p> <p>“Records of additional tests and checks of instrumentation or equipment used in conjunction with a suspected overexposure, questionable indication or unusual occurrence should be retained. In addition, records of special instrument calibrations and modifications made in accordance with Article 562.6 shall [835.703(d)] be retained.”</p>	
<p>90 Sec. 835.704(a)</p> <p>Administrative records.</p> <p>Training records shall be maintained, as necessary, to demonstrate compliance with Sec. 835.901.</p>	<p>Article 612.3 (excerpt)</p> <p>“Documentation of previous training should include the individual’s name, date of training, topics covered, and name of the certifying official.”</p> <p>Article 725.1, 3, 4, 5, 6 (3-6 are excerpts, 725.3.e is modified)</p> <p>1. “Records of training and qualification in radiological control shall [835.704(a)] be maintained to demonstrate that a person received appropriate information to perform the work assignment in a safe manner. Qualification standard records shall [835.704(a)] be retained for on-the-job and practical factor training as well as for formal classroom training.</p>	

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	<p>3. Personnel training records shall [835.704(a)] be controlled and retained. At a minimum, these records shall [DOE 5480.20A, Ch. 1, Section 15 (a)] include the following:</p> <ul style="list-style-type: none"> a. Course title b. Attendance sheets with instructor's name c. Employee's name, identification number, and signature d. Date of training e. Identification of the examination or examination form, including sufficient data to identify which test each person completed f. Verification document or record confirming satisfaction of the training requirement g. Documentation related to exceptions for training requirements and extensions of qualification h. Quizzes, tests, responses and acknowledgements of training, with the date and signature of the person trained i. Special instructions to individuals concerning prenatal radiation dose, acknowledged by the individual's signature." <p>4. Records shall [835.704(a)] be retained for the following types of radiation safety training.</p> <ul style="list-style-type: none"> • General employee radiological training • Radiological worker training • Periodic retraining • Training of radiological control technicians • Members of the public training <p>"Records shall [835.704(a)] be retained for the following types of radiation safety training:</p> <ul style="list-style-type: none"> • Instructor training • Training of other radiological control personnel 	

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	<ul style="list-style-type: none"> • Respiratory protection training • Qualifications for special tests or operations • Training of emergency response personnel • Training of RGD operators. • Onsite training of radiographers <p>5. The following instructional material should be maintained:</p> <p>a. Course name, with revision and approval date</p> <p>b. Instructor’s manuals, course content, or lesson plans containing topical outlines.</p> <p>c. Video and audio instructional materials including the dates and lessons for which they were used.</p> <p>d. Handouts or other materials retained with the master copy of the course</p> <p>e. Job-specific training documents, such as instrument use, radiological procedures, Radiological Work Permit special training requirements, pre-job briefings and mock-up training.</p> <p>6. Documentation of training and qualification received at another DOE location need not be duplicated.”</p>	
91 Sec. 835.704(b) Actions taken to maintain occupational exposures as low as reasonably achievable, including the actions required for this purpose by Sec. 835.101, as well as facility design and control actions required by Secs. 835.1001, 835.1002, and 835.1003, shall be documented.	Article 742 (excerpt) “Actions taken to maintain occupational exposures as low as reasonably achievable, including actions required for this purpose in the radiation protection program (RPP), as well as facility design and control actions required by Articles 128 and 311, shall [835.704(b)] be documented.”	“Actions taken to maintain...” means the seven essential elements of an occupational ALARA program, as specified in the Implementation Guide, “Occupational ALARA Program Guide”, DOE G 441.1-2, Rev.1, March 17, 1999.
92 Sec. 835.704(c) Records shall be maintained to document the results of internal audits and other reviews of program content and implementation.	Article 743 (excerpt) “Records shall [835.704(c)] be maintained to document the results of internal audits and other reviews of radiation protection program content and implementation.”	

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93 Sec. 835.704(d) Written declarations of pregnancy, including the estimated date of conception and revocations of declarations of pregnancy, shall be maintained.	Article 215 (modified) “After a female worker voluntarily notifies her employer in writing that she is pregnant, for the purposes of fetal/embryo dose protection, she is considered a declared pregnant worker. This declaration may be revoked, in writing, at any time by the declared pregnant worker.” Article 723.3 (excerpt) “Written declarations of pregnancy, including the estimated date of conception, and revocations of declarations of pregnancy shall [835.704(d)] be maintained.”	
94 Sec. 835.704(e) Changes in equipment, techniques, and procedures used for monitoring shall be documented.	Article 751.2 “Changes in equipment, techniques, and procedures used for monitoring shall [835.704(e)] be documented.”	Note: For the purposes of this RPP, documented changes are limited to those changes to sampling and monitoring systems directly related to occupational radiation protection (for example, area monitoring and air sampling) and not process monitoring.
95 Sec. 835.704(f) Records shall be maintained as necessary to demonstrate compliance with the requirements of §§ 835.1201 and 835.1202 for sealed radioactive source control, inventory, and source leak tests.	Article 755.1 (excerpt) “Records shall [835.704(f)] be maintained as necessary to demonstrate compliance with the requirements of Article 431 for sealed radioactive source control, inventory, and source leak tests.” Article 755.2 “In addition to the elements provided in Article 751, records of sealed radioactive source leak tests shall [835.704(e); 835.1202] include, at a minimum, the following information: a. Model and serial number of counting equipment b. Contamination levels (using appropriate units) and appropriate supporting parameters including counting efficiency, counting time, correction factors, and type of radiation c. Corrective actions for leaking sources.”	

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	Waste Treatment Plant Radiological Control Manual	Other Implementing Provisions
	<p>Article 755.3</p> <p>“Records of sealed radioactive source inventories shall [835.704(f); 835.1202] include, at a minimum, the following information:</p> <ul style="list-style-type: none"> a. The physical location of each accountable sealed radioactive source b. Verification of the presence and adequacy of associated postings and labels c. Verification of the adequacy of storage locations, containers, and devices.” 	

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Subpart J Radiation Safety Training		
101 Sec. 835.901(a) Radiation safety training Each individual shall complete radiation safety training on the topics established at § 835.901(c) commensurate with the hazards in the area and the required controls: <ul style="list-style-type: none"> (1) Before being permitted unescorted access to controlled areas; and (2) Before receiving occupational dose during access to controlled areas at a DOE site or facility. 	Article 613.3 (Modified) “General Employee Radiological Training: Each individual shall [835.901(a)] complete radiation safety training on the topics established in Article 613.1 commensurate with the hazards in the area and the required controls: <ul style="list-style-type: none"> a. Before being permitted unescorted access to controlled areas; and b. Before receiving occupational dose during access to controlled areas at a DOE site or facility.” Article 622.1 (excerpt) “Members of the public shall [835.901(a)] receive radiation safety training prior to being permitted unescorted access to Radiologically Controlled Areas. This training shall [835.901(c)] address the radiation safety training topics in Article 613.1 to the extent appropriate for the degree of exposure to radiological hazards that may be encountered.”	BNI implements the requirements of § 835.901 through the WTP training program and through subcontracted services. Note: General Employee Radiological Training (GERT) is used to satisfy this 10 CFR 835 requirement. Clarification: Radiological Worker Training satisfies the requirements for GERT. BNI will apply the graded approach in the implementation of BNI Radiation Protection Program procedures for this functional area. Note the application of § 835.901(c) graded approach applies to requirements 101 through 103.
102 Sec. 835.901(b) Each individual shall demonstrate knowledge of the radiation safety training topics established at § 835.901(c), commensurate with the hazards in the area and required controls, by successful completion of an examination and performance demonstrations: <ul style="list-style-type: none"> (1) Before being permitted unescorted access to radiological areas; and (2) Before performing unescorted assignments as a radiological worker. 	Article 613.4 “Each individual shall demonstrate knowledge of the radiation safety training topics established in Article 613.1, commensurate with the hazards in the area and required controls, by successful completion of an examination and performance demonstrations: <ul style="list-style-type: none"> a. Before being permitted unescorted access to radiological areas; and b. Before performing unescorted assignments as a radiological worker.” 	Clarification: BNI applies a two tier training approach to individual or position training. Common skills and knowledge are provided at a site-wide level and additional training is provided at the facility level to address facility or process specific skills or knowledge attributes.
103 Sec. 835.901(c) Radiation safety training shall include the following topics, to the extent appropriate to each individual’s prior training, work assignments, and degree of exposure to potential radiological hazards: <ul style="list-style-type: none"> (1) Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure; 	Article 613.1 (excerpt) “Radiation safety training shall [835.901(c)] include the following topics, to the extent appropriate to each individual’s prior training, work assignments, and degree of exposure to potential radiological hazards: <ul style="list-style-type: none"> a. Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure;” 	

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(2) Basic radiological fundamentals and radiation protection concepts; (3) Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions; (4) Individual rights and responsibilities as related to implementation of the facility radiation protection program; (5) Individual responsibilities for implementing ALARA measures required by § 835.101; and (6) Individual exposure reports that may be requested in accordance with § 835.801.	b. Basic radiological fundamentals and radiation protection concepts; c. Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions; d. Individual rights and responsibilities as related to implementation of the facility radiation protection program; e. Individual responsibilities for implementing ALARA measures; and f. Individual exposure reports that may be requested in accordance with Article 712.4 <u>781</u> .	
104 Sec. 835.901(d) When an escort is used in lieu of training in accordance with paragraph (a) or (b) of this section, the escort shall: (1) Have completed radiation safety training, examinations, and performance demonstrations required for entry to the area and performance of the work; and (2) Ensure that all escorted individuals comply with the documented radiation protection program.	Article 635 (excerpt) “When an escort is used in lieu of training in accordance with Article 613.12 and 613.13, the escort shall [835.901(d)]: a. Have completed radiation safety training, examinations, and performance demonstrations required for entry to the area and performance of the work; and b. Ensure that all escorted individuals comply with the documented radiation protection program.”	
105 Sec. 835.901(e) Radiation safety training shall be provided to individuals when there is a significant change to radiation protection policies and procedures that may affect the individual and at intervals not to exceed 24 months. Such training provided for individuals subject to the requirements of § 835.901(b)(1) and (b)(2) shall include successful completion of an examination.	Article 613.3 (excerpt) Changes to the program shall [835.901(e)] be incorporated as they are identified and a decision made if retraining prior to the 24 month period is needed. Article 613.4 (excerpt) “Radiation safety training shall [835.901(e)] be provided to individuals when there is a significant change to radiation protection policies and procedures that may affect the individual.” Article 613.4 (excerpt and modified) “Radiation safety training shall be provided to individuals at intervals not to exceed 24 months.”	BNI will apply the graded approach in the implementation of BNI Radiation Protection Program procedures for this functional area

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	<p>Article 613.4(excerpt)</p> <p>“Such training provided for individuals subject to the requirements of this Article shall [835.901(e)] include successful completion of an examination.”</p>	

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Subpart K	Design and Control	
106 Sec. 835.1001(a) Design and control. Measures shall be taken to maintain radiation exposure in controlled areas ALARA through physical design features and administrative control. The primary methods used shall be physical design features (e.g., confinement, ventilation, remote handling, and shielding). Administrative controls shall be employed only as supplemental methods to control radiation exposure.	Article 311 (excerpt) “During routine operations, the combination of physical design features and administrative control shall [835.1003(a-b)] provide that: 1) the anticipated occupational dose to general employees shall [835.1003(a)] not exceed the limits established in Table 2-1, and 2) the ALARA process is utilized for personnel exposures to ionizing radiation.” Article 311 (excerpt) “The primary methods used to maintain exposures ALARA shall [835.1001(a)] be physical design features (e.g., confinement, ventilation, remote handling, and shielding).” Article 311 (modified) “Administrative controls shall [835.1001(a)] be employed only as supplemental methods to control radiation exposure.”	The plans and measures for complying with 10 CFR 835 design and control requirements are described in PL-W375-NS00005 24590-WTP-PL-NS-01-002 , <i>RPP-WTP Occupational ALARA Program</i> .
107 Sec. 835.1001(b) For specific activities where use of physical design features is demonstrated to be impractical, administrative controls shall be used to maintain radiation exposures ALARA.	Article 316.2 “The minimization and control of internal exposure as discussed in Article 136 should be conducted in accordance with the following hierarchy of controls: 2. For specific activities where use of physical design features is demonstrated to be impractical, administrative controls shall [835.1001(b)] be used to maintain radiation exposures ALARA.”	
Sec. 835.1002 Facility design and modifications During the design of new facilities or modification of existing facilities, the following objectives shall be adopted:		
108 Sec. 835.1002(a) Optimization methods shall be used to assure that occupational exposure is maintained ALARA in developing and justifying facility design and physical controls.	Article 128.1.a (excerpt) “Optimization methods shall [835.1002(a)] be used to assure that occupational exposure is maintained ALARA in developing and justifying facility design and physical controls.”	

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109 Sec. 835.1002(b) The design objective for controlling personnel exposure from external sources of radiation in areas of continuous occupational occupancy (2000 hours per year) shall be to maintain exposure levels below an average of 0.5 mrem (5 microsieverts) per hour and as far below this average as is reasonably achievable. The design objectives for exposure rates for potential exposure to a radiological worker where occupancy differs from the above shall be ALARA and shall not exceed 20 percent of the applicable standards in Sec. 835.202.	Article 128.1.a (excerpt) “Optimization methods shall [835.1002(a)] be used to assure that occupational exposure is maintained ALARA in developing and justifying facility design and physical controls.” Article 128.1.b (excerpt) “The design objective for controlling personnel exposure from external sources of radiation in areas of continuous occupational occupancy (2000 hours per year) shall [835.1002(b)] be to maintain exposure levels below an average of 0.5 mrem (5 microsieverts) per hour and as far below this average as is reasonably achievable.” Article 128.2 (excerpt) “Facilities currently under construction should be evaluated and the above criteria applied where practicable.” Article 128.1.b (excerpt) “The design objective for controlling personnel exposure from external sources of radiation in areas of continuous occupational occupancy (2000 hours per year) shall [835.1002(b)] be to maintain exposure levels below an average of 0.5 mrem (5 microsieverts) per hour and as far below this average as is reasonably achievable. The design objectives for exposure rates for potential exposure to a radiological worker where occupancy differs from the above shall [835.1002(b)] be ALARA and shall [835.1002(b)] not exceed 20 percent of the applicable standards in Table 2-1.	
110 Sec. 835.1002(c) Regarding the control of airborne radioactive material, the design objective shall be, under normal conditions, to avoid releases to the workplace atmosphere and in any situation, to control the inhalation of such material by workers to levels that are ALARA; confinement and ventilation shall normally be used.	Article 128.1.c (excerpt) “Regarding the control of airborne radioactive material, the design objective shall [835.1002(c)] be, under normal conditions, to avoid releases to the workplace atmosphere and in any situation, to control the inhalation of such material by workers to levels that are ALARA; confinement and ventilation shall [835.1002(c)] normally be used.”	

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111 Sec. 835.1002(d) The design or modification of a facility and the selection of materials shall include features that facilitate operations, maintenance, decontamination, and decommissioning.	Article 128.1d (excerpt) “The design or modification of a facility and the selection of materials shall [835.1002(d)] include features that facilitate operations, maintenance, decontamination, and decommissioning.” Article 128.2 “Facilities currently under construction should be evaluated and the above criteria applied where practicable.”	
112 Sec. 835.1003(a) Workplace controls During routine operations, the combination of physical design features and administrative controls shall provide that: (a) The anticipated occupational dose to general employees shall not exceed the limits established at § 835.202; and	Article 213.1 (modified) “Occupational dose limits are provided in Table 2-1 and shall [835.202(a)] not be exceeded. All occupational exposure received during the current year shall be included when demonstrating compliance with Table 2-1 dose limits.” Table 2-1 (excerpt) Summary of Dose Limits “General Worker: Whole Body TEDE (internal + external):Annual Limit – 5 rem.” Article 311 (modified and excerpted) “The primary methods used to maintain (TEDE < or = 5 rem) in a year shall be facility and equipment design features. These features may be augmented by administrative and procedural requirements.”	
113 Sec. 835.1003(b) (b) The ALARA process is utilized for personnel exposures to ionizing radiation	Article 311 (excerpt) “ During routine operations, the combination of physical design features and administrative control shall [835.1003(a-b)] provide that: 2) the ALARA process is utilized for personnel exposures to ionizing radiation.”	

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Subpart N Emergency Exposure Situations			
128	Sec. 835.1301(a)	Article 213.4 (excerpt) “A general employee whose occupational dose has exceeded the numerical value of any of the limits specified in Table 2-1 as a result of an authorized emergency exposure may be permitted to return to work in radiological areas during the current year providing that all of the following conditions are met: <ul style="list-style-type: none"> • Approval is first obtained from the contractor management and the Head of the responsible DOE field organization (DOE-ORP Manager);” Article 213.4 (excerpt) “A general employee whose occupational dose has exceeded the numerical value of any of the limits in specified in Table 2-1 as a result of an authorized emergency exposure may be permitted to return to work in radiological areas during the current year providing that all of the following conditions are met: <ul style="list-style-type: none"> • The individual receives counseling from radiological protection and medical personnel regarding the consequences of receiving additional occupational exposure during the year; and” Article 213.4 (excerpt) “A general employee whose occupational dose has exceeded the numerical value of any of the limits in specified in Table 2-1 as a result of an authorized emergency exposure may be permitted to return to work in radiological areas during the current year providing that all of the following conditions are met: <ul style="list-style-type: none"> • The affected employee agrees to return to radiological work.” 	In the event the circumstances outlined in § 835.1301(a) occurs, the provisions in § 835.1301 shall be followed. BNI implements requirement § 835.1301(a) through the emergency preparedness program, and administrative documents.
129	Sec. 835.1301(b)	Article 722.12 “Authorized emergency exposures and planned special exposures shall [835.1301(b)] be accounted for separately, but maintained with the individual’s occupational exposure records.” Article 723.1 (excerpt) “The complete records of radiological incidents and occurrences involving personnel dose shall [835.1301(b)] be retained.”	

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	Article 213.4b (excerpt) “All doses exceeding the limits specified in Table 2-1 shall [835.1301(b)] be recorded in the affected individual’s occupational dose record.”	
130 Sec. 835.1301(c) When the conditions under which a dose was received in excess of the limits specified in Sec. 835.202, except those received in accordance with Sec. 835.204, have been eliminated, operating management shall notify the Head of the responsible DOE field organization.	Article 213.4 (excerpt) “When the conditions under which a dose was received in excess of the limits specified in Table 2-1, except those received in accordance with the planned special exposure provisions in Article 213.3, have been eliminated, operating management shall [835.1301(c)] notify the Head of the responsible DOE field organization.”	
131 Sec. 835.1301(d) Operations after a dose was received in excess of the limits specified in Sec. 835.202, except those received in accordance with Sec. 835.204 may be resumed only with the approval of DOE.	Article 345 <u>213.4d</u> (excerpt) “Operations after a dose was received in excess of the limits specified in Table 2-1, except those received in accordance with Article 213. <u>34</u> , may be resumed only with the approval of DOE.”	
132 Sec. 835.1302(a) Emergency exposure situations. The risk of injury to those individuals involved in rescue and recovery operations shall be minimized.	Appendix 2A (excerpt) “Guidelines for Control of Emergency Exposures” “In extremely rare cases, emergency exposure to radiation may be necessary to rescue personnel or to protect major property. Emergency exposures may be authorized in accordance with the provisions contained in Article 213.4.” Article 213.4.e (excerpt) “The risk of injury to those individuals involved in rescue and recovery operations shall [835.1302(a)] be minimized.”	“Risk...shall be minimized” means, if alternative actions are available to meet emergency needs, then adopting the action with the lowest assessed risk of significant personnel injury shall take precedence over property loss considerations. Clarification: Implementation of guidelines will utilize professional judgement within the confines of approved emergency procedures. Subsequent to an emergency, BNI use of professional judgement will be evaluated as a part of the event as discussed in “Occupational Radiation Protection Record-Keeping and Reporting Guide,” DOE G 441.1-11 of May 1999, Section 4.1.2.1, 8th bullet.

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133 Sec. 835.1302(b) Operating management shall weigh actual and potential risks against the benefits to be gained.	Article 213.4.e (excerpt) “Emergency exposure limits are not Planned Special Exposure limits. The following apply to emergency situations: Operating management shall [835.1302(b)] weigh actual and potential risks against the benefits to be gained.”	
134 Sec. 835.1302(c) No individual shall be required to perform a rescue action that might involve substantial personal risk.	Article 213.4.e (excerpt) “Emergency exposure limits are not Planned Special Exposure limits. The following apply to emergency situations: No individual shall [835.1302(c)] be required to perform a rescue action that might involve substantial personal risk.”	
135 Sec. 835.1302(d) Each individual authorized to perform emergency actions likely to result in occupational doses exceeding the values of the limits provided at § 835.202(a) shall be trained in accordance with § 835.901(b) and briefed beforehand on the known or anticipated hazards to which the individual will be subjected.	Appendix 2A (excerpt) “Emergency exposures may be authorized in accordance with the provisions contained in Article 213.4.” Article 656.7 “Provisions should be in place to accommodate rapid site and radiological area access by on-site and off-site emergency workers such as firefighters, medical personnel, and security personnel. 7. Each individual authorized to perform emergency actions likely to result in occupational doses exceeding the values of the limits provided in Table 2-1 shall [835.1302(d)] be trained in accordance with Article 613.4 and briefed beforehand on the known or anticipated hazards to which the individual will be subjected.”	
136 Sec. 835.1304(a) Nuclear accident dosimetry. Installations possessing sufficient quantities of fissile material to potentially constitute a critical mass, such that the excessive exposure of individuals to radiation from a nuclear accident is possible, shall provide nuclear accident dosimetry for those individuals.	Article 515.1 (excerpt) “Installations possessing sufficient quantities of fissile material to potentially constitute a critical mass, such that the excessive exposure of individuals to radiation from a nuclear accident is possible, shall [835.1304(a)] provide nuclear accident dosimetry for those individuals.”	For the purpose of this requirement, BNI defines “Critical Mass” as the smallest mass of fissionable material that will support a self-sustaining chain reaction under specified conditions.

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		<p>For the purpose of this requirement, BNI defines “Safe Mass” as that mass of fissionable materials which is subcritical for all conditions to which it could reasonably be expected to be exposed, including processing, handling, storing, and procedural uncertainties.</p> <p>BNI does not currently manage any facilities identified within the scope of § 835.1304. Should facilities be identified within this scope the requirements of § 835.1304 will be followed.</p>
<p>137 Sec. 835.1304(b)</p> <p>Nuclear accident dosimetry shall include the following:</p> <p>(1) A method to conduct initial screening of individuals involved in a nuclear accident to determine whether significant exposures to radiation occurred;</p> <p>(2) Methods and equipment for analysis of biological materials;</p> <p>(3) A system of fixed nuclear accident dosimeter units; and</p> <p>(4) Personal nuclear accident dosimeters.</p>	<p>Article 515.2 (excerpt)</p> <p>“Nuclear accident dosimetry shall [835.1304(b)] include the following:</p> <p>a. A method to conduct initial screening of individuals involved in a nuclear accident to determine whether significant exposures to radiation occurred;”</p> <p>b. Methods and equipment for analysis of biological materials;”</p> <p>c. A system of fixed nuclear accident dosimeter units; and”</p> <p>d. Personal nuclear accident dosimeters.”</p>	<p>BNI does not currently manage any facilities identified within the scope of § 835.1304. Should facilities be identified within this scope, the requirements of § 835.1304 will be followed.</p>